

Legislative Audit Division

State of Montana



Report to the Legislature

November 2004

Information System Audit

Evaluation of Adult Offender Computer System Acquisition Process

Department of Corrections

This report contains two recommendations addressing:

- The development of a structured decision-making and project management framework.
- The development of a methodology to address data quality problems and ensure the problems are identified, corrected and solved prior to implementing the new system.

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Members of the IS audit staff hold degrees in disciplines appropriate to the audit process. Areas of expertise include business, accounting and computer science.

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November 2004

The Legislative Audit Committee
of the Montana State Legislature:

We conducted an Information Systems audit of the Montana Department of Corrections' Adult Offender Computer Systems. Our audit focused on the effectiveness of the data accuracy improvement efforts for the existing systems, ACIS and ProFiles, and the acquisition and planning processes for the new offender management system, O-Track.

We wish to express our appreciation to the department for their cooperation and assistance.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Scott A. Seacat", with a long, sweeping horizontal line extending to the right.

Scott A. Seacat
Legislative Auditor

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Legislative Audit Division

Information System Audit

Evaluation of Adult Offender Computer System Acquisition Process

Department of Corrections

Members of the audit staff involved in this audit were David P. Nowacki and Jessica Solem.

Table of Contents

Appointed and Administrative Officials	ii
Chapter I - Introduction and Background.....	1
Introduction	1
Objectives.....	1
Audit Scope and Methodology.....	2
System Development to Date.....	3
Conclusion.....	3
Chapter II - System Acquisition Process.....	5
Offender Management System History	5
The Proposed New System - What is O-Track?.....	5
Lack of Documentation and Support for Decision on New System	6
Does MDOC need a new system?.....	6
What do they want the system to do?.....	7
Has the project been approved, and what were the deciding factors?	7
Summary	8
Chapter III – Data Quality	11
Data Quality Efforts	11
Summary	12
Department Response	A-1
Department of Corrections.....	A-3

Appointed and Administrative Officials

Department of Corrections

Bill Slaughter, Director

Joe Williams, Centralized Services Administrator

John Daugherty, Information Technology Bureau Chief

Chapter I - Introduction and Background

Introduction

Montana Department of Corrections (MDOC) uses a records management system to collect adult offender data and reproduce information in reports for requesting individuals and groups. Report types range from incarceration rates, average sentence lengths, recidivism rates, offender movements, and several demographical and statistical reports. Some reports are used to make MDOC budgetary decisions, while others range from Legislative requests to requests from judges and lawyers for trial purposes.

The original offender management system used by MDOC was developed in-house, in the late 1970s; the system was called ACIS (Adult Correctional Information System). A 1997 legislative audit (97DP-07) revealed many data accuracy issues attributed to ACIS design and lack of data input controls to mitigate data entry errors. Subsequent to the audit, MDOC began an initiative to improve data quality, which included the decision to develop a replacement system, ProFiles (Programmed Reporting of Offender's Files). ProFiles implementation was never completed. A hybrid system currently exists (Pro-ACIS) utilizing ACIS and ProFiles functionality, and ProFiles development has halted.

Objectives

Due to the department's decision to replace ACIS with ProFiles, we did not perform a follow-up audit of ACIS. Approximately seven years have passed since the completion of the last audit. Issues identified by MDOC personnel and reiterated by external consultants led to MDOC halting development and implementation of the replacement system, ProFiles, prior to completion. Currently MDOC is seeking funding for a new system as its solution.

During the current audit, no further work was performed on data inaccuracies because MDOC represented to us the data residing in the system is still 10-15 percent inaccurate. This audit focused on MDOC efforts to resolve issues contributing to the incomplete development of a replacement system, and the approach MDOC is taking to ensure the new offender management system is

Chapter I - Introduction and Background

successfully implemented, with quality data. Specific questions to be answered include:

- 1) Has MDOC resolved the data quality and documentation issues that arose during ProFiles system development?
- 2) Has MDOC followed a structured decision-making approach for acquiring and implementing a new system?

This subject matter is important because it will facilitate the successful implementation of a new offender management system and resolution of continuing data quality issues.

Audit Scope and Methodology

Audit scope included the system acquisition process and data quality efforts performed by MDOC Information Technology Bureau personnel and supporting documentation. The audit approach involved testing two significant assumptions: 1) The system acquisition process and documentation are governed by an organized, structured approach that is defined and strictly followed. 2) The data quality procedures and documentation will correct existing data accuracy problems and ensure that existing data accuracy issues are resolved prior to implementing a new system. Methodologies used to fulfill our objectives included interviews with management and MDOC personnel regarding system acquisition and data quality procedures, and review of existing documentation. The information obtained through interview and documentation review was compared to appropriate criteria to determine whether MDOC procedures met our expectations.

Criteria used to evaluate MDOC's systems acquisition procedures are the Project Management Institute's Project Management Body of Knowledge, generally accepted guidance in the project management profession. Additional criteria used are the Information Systems Audit and Control Association's Control Objectives for Information Technology and information technology industry best practices. The audit was conducted in accordance with Government Auditing Standards published by the United States Government Accountability Office (GAO).

System Development to Date

The original offender management system (ACIS) was developed using in-house resources within the department's operating budget. The system had problems and was to be replaced. The intended replacement system (ProFiles) has been developed to-date using in-house resources and existing operating budget, but development has halted. The hybrid system (Pro-ACIS) has been providing the necessary functionality for the past 4 years, but it never completely solved all of the ACIS problems and is progressively becoming inadequate to meet the needs of the Federal Homeland Security Act. At the time of our audit, funding for the department's proposed new system had been denied during the Executive Program Planning process, but has since been resubmitted. If the funding is denied, the department intends to implement a selected software using contracted resources and modify accordingly, using in-house resources and existing operating budget.

Conclusion

MDOC has not effectively implemented a solution to the existing data accuracy problems since our last offender management system audit. Over the past seven years the historic use of in-house resources, both human capital as well as funding, has proven to be less than effective given staff also have day-to-day responsibilities and lack project management experience. The decision-making approach used in planning for and acquiring a new offender management system and solving existing data quality problems does not have the level of structure, definition, and documentation necessary to ensure it is effective. Consequently, MDOC has not determined what the data quality problems for the existing system are, the extent of the data quality problems, and how the proposed new system will be the solution to their data problems. The following chapters specifically address these issues.

Chapter II - System Acquisition Process

Offender Management System History

Per MDOC, the 1997 decision to develop an ACIS replacement was based on the limited functionality of older technology. Lack of experienced programmers using this older technology and the cost to develop and maintain it also contributed to the decision. MDOC management at the time represented to its users that the implementation of the new ProFiles system would be the solution to their problems.

ProFiles was to be developed in-house using new technology. Existing staff would act as project managers, and consultants would be used as developers and for project guidance. A 1999 report by a project management consultant pointed out several major flaws in the department's management and development process including lack of project management experience and data accuracy issues. The report recommended ways to mend problems prior to proceeding with the ProFiles project. Disagreements among project managers, developers and consultants led to significant turnover and the project schedule slowed.

Implementation was to occur in phases; as one ProFiles module was completed, that module in ACIS would be retired. Currently, only two of four ACIS modules have been replaced and the hybrid system, Pro-ACIS, utilizes both ACIS and ProFiles functionality. In 2002 MDOC decided to seek an alternative solution. Management stated the following considerations contributed to the decision: the time it takes to develop an in-house system, human resource availability, the cost to solve the current system design problems, and lack of additional funding.

The Proposed New System – What is O-Track?

O-Track is software initially developed by the Utah Department of Corrections. The system provides information for managing offenders in secure facilities and in community settings. In addition, the system maintains historical criminal record and other key demographic details about offenders. O-Track is owned by a consortium of states that manages the software and pools resources

Chapter II – System Acquisition Process

to make improvements. Current consortium members include Utah, Alaska, New Mexico, Idaho, South Carolina, Oregon and Colorado. In an effort to promote Homeland Security, the State of Utah made the decision to give the software to any state at no cost. Montana has joined the consortium and is planning to implement O-Track pending proper funding.

Lack of Documentation and Support for Decision on New System

MDOC has not documented details supporting major decisions in the system acquisition process.

The Montana Department of Corrections (MDOC) has not demonstrated a structured approach to the acquisition of a new offender management system. A structured approach provides for documentation supporting considerations that result in critical decisions made throughout the life of the project. The Project Management Institute states the relationship between the product being created and the business need or other stimulus that gave rise to the project should be documented. Aside from verbal explanations, MDOC is unable to provide documentation to support critical decisions including:

- ▶ The need for a new offender management system
- ▶ The functional requirements or business needs to be met by the new offender management system
- ▶ Formal documented approval of the project

Does MDOC need a new system?

An earlier decision to replace ACIS with ProFiles was based on obsolete technologies and system design Inadequacies contributing to data inaccuracies. Based on their systems development history, MDOC estimates it is two years from replacing the remaining ACIS functionality, and estimates an additional five or six years to add desired functionality to record offender visitor information or support homeland security issues such as interstate information sharing. Using in-house resources, personnel indicate this timeframe is one reason MDOC is seeking a new system and abandoning existing system development efforts on ProFiles. Analysis supporting the need for a new system is not documented.

What do they want the system to do?

ProFiles system development efforts have been based on system enhancements determined in 1998, six years ago. MDOC has not documented current functional requirements or business needs prior to the selection of the new system. A traditional gap analysis compares business requirements and functionality between two information systems to determine differences, the gap, and ensures the desired needs can be met. According to department personnel, involving staff knowledgeable of current operations took the place of documented business requirements. The gap analysis performed did not compare Pro-ACIS to the new system because defined business requirements were not documented. Instead MDOC depended on user requirements being verbally communicated through the participation of these knowledgeable staff.

MDOC contends that participants in the gap analysis were the same knowledgeable staff that would have been involved in a full business requirements analysis. However, information such as business requirements should be documented so MDOC is not solely depending on knowledge stored in the minds of staff. Given the department's history of turnover with key management and development personnel, critical information about desired business requirements could be lost if not clearly documented. The requirements verbally communicated during the gap analysis process are not clearly documented such that everyone involved who needs access to the requirements to make informed decisions can efficiently and effectively understand them. Without documented requirements and needs, it will be difficult for MDOC to determine whether the new system is effectively meeting their requirements. MDOC has stated that further needs will be explored when a contractor arrives to perform final functional specification work.

Has the project been approved, and what were the deciding factors?

Per department management, the final decision has been made to acquire O-Track and pursuit of the project has been recommended by the MDOC Automation Projects Oversight Committee, IT staff, community corrections staff, and the management team. Although this decision has been made, no formal approval has been

Chapter II – System Acquisition Process

documented explaining what was approved and what the decision was based on. Without documentation, it is unclear what these groups approved. Project management provides a framework to formally authorize a new project and defines documentation necessary to make the formal approval including a description of what the project is, how the project will be selected including criteria and methods, and what business need resulted in the pursuit of the project.

Summary

The O-Track software was offered for no charge, which made it the most desirable solution to MDOC. The source code to the software is offered as-is, which means MDOC is responsible for customizing, implementing, maintaining and supporting the software. While a benefit of joining the consortium is to share the maintenance and development efforts, contractually, neither Utah nor the other consortium states are responsible for the code obtained by Montana. MDOC has obtained the source code, but has not evaluated it in Montana's IT environment because the software operates on database and operating system platforms that are non-standard to the State of Montana and will have to be purchased. States are provided no user documentation; therefore, this too is a responsibility of individual states; a basis for training users.

O-Track cannot be implemented off-the-shelf, and must be customized. Even though the software is free, MDOC has requested approximately \$1.9 million through the Executive Program Planning process. Cost estimates include equipment, customization, support, and training. We contacted other consortium member states regarding the additional costs incurred during O-Track implementation. No consensus was gathered on exact costs, but one theme was consistent; their cost estimates were underestimated. Costs included project management, hardware and operating systems administration, database administration, documentation development and costs to plan and perform additional modifications.

Documentation does not support that MDOC has a process that will enable it to successfully implement the new system as a solution to

the data accuracy problems, or that necessary considerations have been taken prior to the decision to select this system. MDOC is depending greatly upon the functionality of the new system, but has not documented critical decisions made to this point. Processes performed and critical decisions made throughout the life of the project are interdependent and affect future processes and decisions. It is important that processes be defined, performed in order, and the results of each process documented. Documentation supports considerations to be included in cost estimates.

By adopting a structured approach to project management, MDOC can conduct the project in a well-managed and consistent manner which will facilitate a successful system implementation.

Management recognizes the importance of a structured approach and has sought guidance from the Department of Administration (DOA), and has developed draft IT planning process documents to provide general guidance for project selection and development. To this date, the system acquisition process has been conducted without the use of either.

Recommendation #1

We recommend the Department of Corrections develop and follow a structured decision-making and project management framework.

Chapter III – Data Quality

Data Quality Efforts

The 1997 legislative audit (97DP-07) included a recommendation to “ensure accuracy and completeness of information in the ACIS system.” The report revealed many data accuracy problems, including inaccurate custody levels of inmates, inaccurate offender description information, incorrect offense dates, wrong defense codes and incorrect probation and parole conditions. The resulting 1997 data quality initiative involved creating two new positions, a Data Validity Officer and a Data Quality Manager. According to personnel, due to strong disagreements on how to improve data quality, techniques never materialized. MDOC currently estimates 10-15 percent data inaccuracies still exist. In September 2001, the Data Validity Officer and Data Quality Manager terminated and the positions were not immediately filled due to budgetary reasons. A new Data Quality Manager was hired in January 2004 and recently drafted a data quality plan; however, the plan has not been approved by the management team.

MDOC has taken a reactive approach to its system data quality efforts. Instead of creating proactive solutions that will mitigate errors from getting into the system, extensive manual analysis is done to identify inaccuracies once data is in the system and prior to releasing information. Due to existing data quality issues and system limitations, Pro-ACIS users have developed databases independent of Pro-ACIS to use in performing job duties. MDOC is in the process of identifying the location of the databases, and acknowledged that some information contained in the independent databases should be entered into Pro-ACIS.

Personnel stated they will depend on the data validity checks they contend are inherent to the new system and the ability to add customizations as a primary means of proactively addressing future data validity controls. While this may be effective for new data entered into the system, there is still the issue of bad data in the existing system, data residing in the independent databases, and how to ensure these errors are corrected prior to data conversion.

MDOC has not decided whether to archive existing data and continue the manual cleansing procedures upon information requests, cleanse the data prior to converting it, or a combination of both. Due to the nature of correctional data and its impact on public safety, it is important that accurate and complete data, both current and historical, is readily available in the new system.

The representation of 10-15 percent data inaccuracy is not supported by documentation or analysis, but more on a sense from the amount of time MDOC spends cleansing data. Documented records are not maintained of error types, frequency of occurrences, or other information about errors found in the manual cleansing procedures aside from an email trail of communication involved in the error correction process. This could lead to a lack of definitive understanding of problem areas. It will be difficult to gauge the effectiveness of the data quality plan and ensure that the new system solves the data quality problems presented in the existing systems.

Summary

Over the past seven years, MDOC has not been able to effectively resolve existing data accuracy problems. Before the new system is implemented, MDOC must resolve the data problems. What use is a new system if it contains bad data? In August 2004, the department took a direction in their data quality efforts by drafting a conceptual overview of a data quality plan, which we did not review for content or confirm as an effective control due to its nondescript and incomplete nature. During our audit, it was too early in their efforts to determine whether they are effective in resolving the existing data quality problems. Additionally, it was not apparent that the extent of the data quality problems has been determined or documented, and progress could not be measured.

Recommendation #2

We recommend MDOC:

- 1) Develop a methodology to address the data quality problems, and**
- 2) Ensure the data inaccuracies are identified and corrected prior to implementing the new system.**

Department Response

DEPARTMENT OF CORRECTIONS



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Re: Response to Legislative Audit Recommendations

Dear Mr. Seacat:

Thank you for the opportunity to respond to the information system audit report for the Department of Corrections. We have reviewed the recommendations contained in the report, and concur with both of the findings. We believe we can demonstrate substantial progress on these recommendations prior to the end of the 2005 Legislative session in April.

To that end, the Department does not intend to accept any appropriation for the purchase of a new information system until we have provided to the Legislature's satisfaction a detailed, structured formal project document that identifies the need for a new offender management system; the functional requirements or business needs to be met by the new system; and the formal documented approval of the project. The Department believes that this can and will be accomplished before legislative adjournment in April. We respectfully request that we be allowed to work with audit staff to monitor our progress in this regard.

RECOMMENDATION #1:

We recommend the Department of Corrections develop and follow a structured decision-making and project management framework.

Response:

Concur. The Department has developed a charter for an IT governance board that will give structure to the decision making process. This charter has been presented to the Department management team and is awaiting formal adoption at its November meeting. The agency is also refining the IT planning process draft document that will provide a formal method for identifying and selecting potential projects.

Additionally, the Department is in the process of developing a project plan for acquisition and implementation of the OMS at this time. The current phase includes the project charter, requirement specifications, and use cases.

RECOMMENDATION #2:

We recommend MDOC:

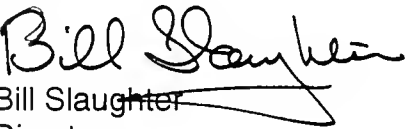
- 1) Develop a methodology to address the data quality problems, and
- 2) Ensure the data inaccuracies are identified and corrected prior to implementing the new system.

Response:

Concur. As mentioned in the Legislative audit, a Data Quality plan has been developed, and has subsequently been approved by the DOC management team. The Data Quality plan details the methodology that MDOC will use to proactively address the data quality issues. Software methodologies are being developed to identify and correct the data inaccuracies with the current system. Please note that the large majority of the data problems are with non-critical data such as date of birth, spellings of towns, names, etc. These problems will be identified and corrected to the greatest extent possible. Currently, there are very few errors with critical data, such as legal records; however these problems are fixed immediately upon discovery.

We sincerely appreciate the legislative staff time devoted to this audit. We look forward to working with you in the coming months as we implement these recommendations.

Sincerely,


Bill Slaughter
Director

